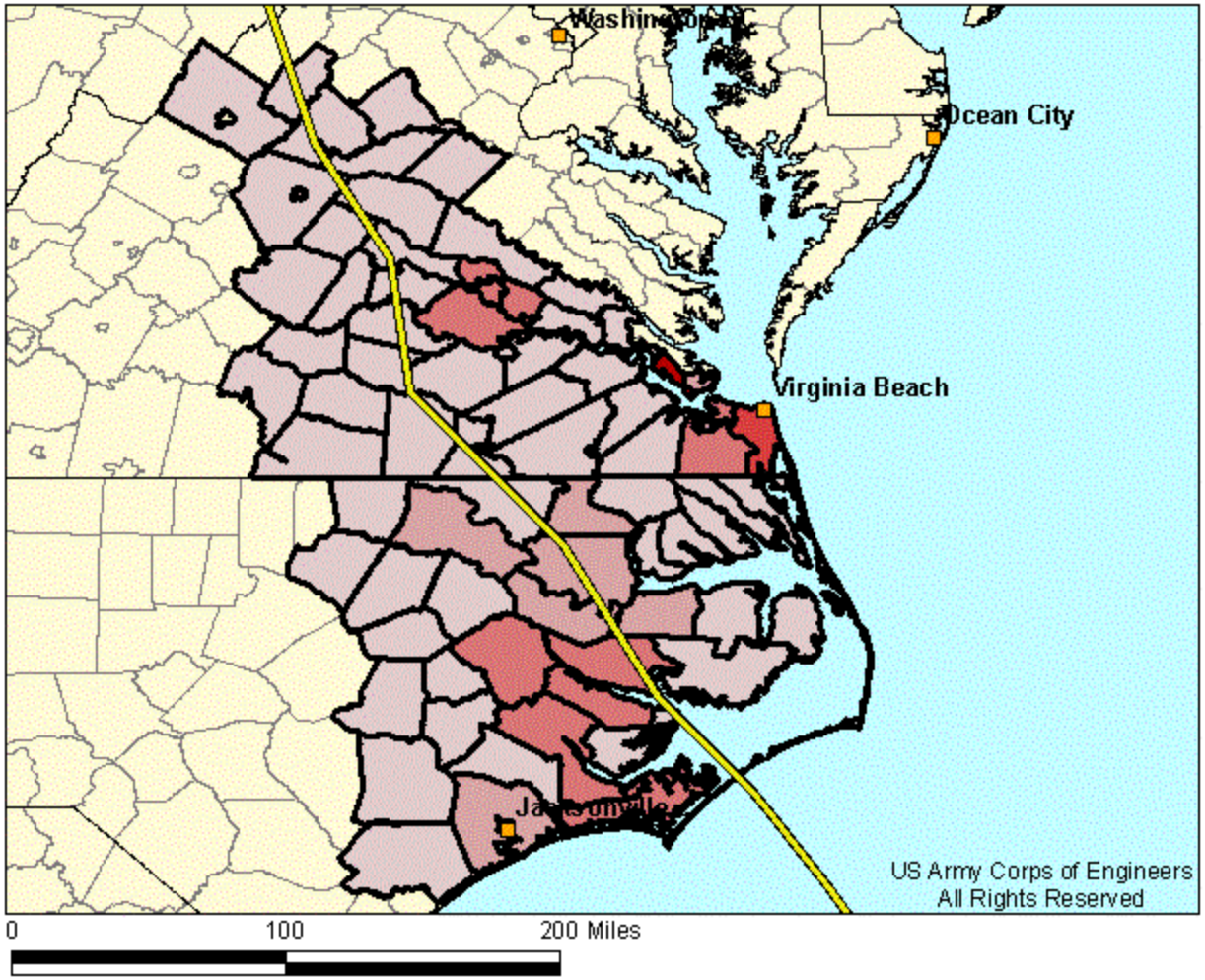
US Army Corps of Engineers

Hurricane Isabel 2003 Debris Model

Landfall Plus About 12 Hours

For Planning Purposes Only!



Post Landfall Debris Model Results

Virginia - 13,679,000 Yards
North Carolina - 3,314,000 Yards

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Debris

- < 100,000 cubic yards
- 100,000 - 249,999 cubic yards
- 250,000 - 499,999 cubic yards
- 500,000 - 999,999 cubic yards
- >1,000,000 cubic yards

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC (1500 EDT 05/15/2008) forecast. The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Debris Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Isabel 2003 Debris Model

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	Yards per State	County	Yards per County
North Carolina		Beaufort	372,000
		Bertie	215,000
		Camden	19,000
		Carteret	307,000
		Chowan	35,000
		Craven	263,000
		Currituck	32,000
		Dare	92,000
		Duplin	15,000
		Edgecombe	88,000
		Franklin	3,000
		Gates	35,000
		Greene	21,000
		Halifax	145,000
		Hertford	111,000
		Hyde	88,000
		Jones	27,000
		Lenoir	72,000
		Martin	191,000
		Nash	88,000
		Northampton	83,000
		Onslow	181,000
		Pamlico	93,000
		Pasquotank	94,000
		Pender	22,000
		Perquimans	35,000
		Pitt	333,000
		Tyrrell	29,000
		Warren	23,000
		Washington	122,000
		Wayne	10,000

State	Yards per State	County	Yards per County
North Carolina		Wilson	70,000
North Carolina	3,314,000		
Virginia		Albemarle	100,000
		Amelia	23,000
		Brunswick	47,000
		Buckingham	15,000
		Charles City	11,000
		Charlotte	< 1,000
		Charlottesville city	55,000
		Chesapeake city	259,000
		Chesterfield	382,000
		Colonial Heights city	27,000
		Culpeper	< 1,000
		Cumberland	14,000
		Dinwiddie	57,000
		Emporia City	16,000
		Fluvanna	32,000
		Franklin City	22,000
		Goochland	28,000
		Greene	20,000
		Greensville	24,000
		Hampton City	161,000
		Hanover	95,000
		Henrico	410,000
		Hopewel City	35,000
		Isle Of Wight	40,000
		James City	33,000
		Louisa	45,000

The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

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Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Isabel 2003 Debris Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Isabel 2003 Debris Model

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	Yards per State	County	Yards per County
Virginia		Lunenburg	19,000
(continued)		Madison	15,000
		Mecklenburg	26,000
		New Kent	11,000
		Newport News city	9,954,000
		Norfolk City	312,000
		Nottoway	29,000
		Orange	23,000
		Page	3,000
		Petersburg city	47,000
		Portsmouth city	143,000
		Powhatan	31,000
		Prince Edward	16,000
		Prince George	36,000
		Richmond City	305,000
		Rockingham	4,000
		Southampton	45,000
		Spotsylvania	3,000
		Suffolk City	95,000
		Surry	12,000
		Sussex	26,000
		Virginia Beach city	573,000
Virginia	13,679,000		

The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

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Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Isabel 2003 Debris Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

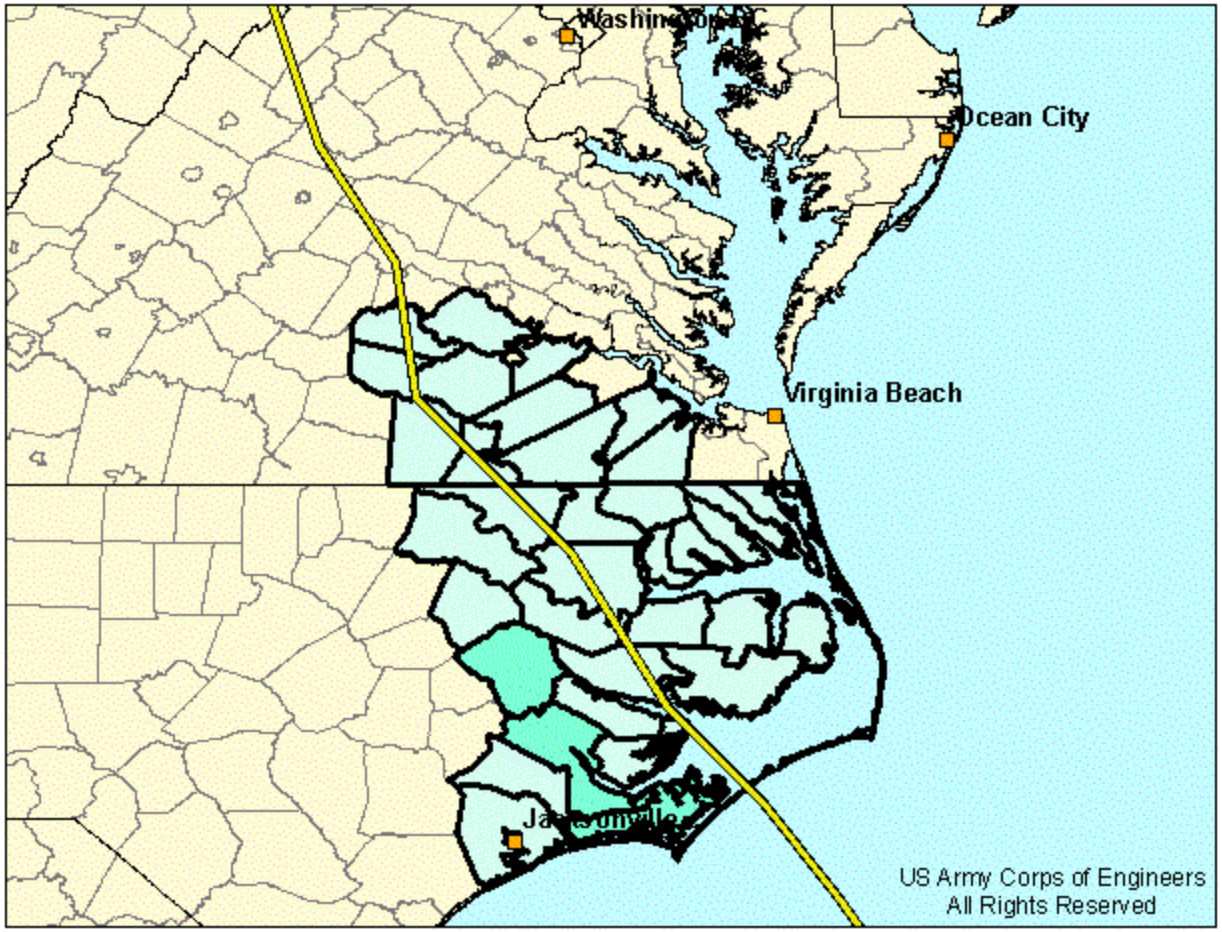
Sources:
HURREVAC
LRL-DEBRIS

Hurricane Isabel 2003 Commodities Model

US Army Corps of Engineers

Landfall Plus About 12 Hours

For Planning Purposes Only!



0 100 200 Miles

Post Landfall Water Model Results

Day One / Day Two / Day Three
NC – 14/28/55 Truckloads
VA – 3/6/13 Truckloads

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Commodities

- < 5 Trucks Each
- 5 - 10 Trucks Each
- 11 - 20 Trucks Each
- 21 - 40 Trucks Each
- > 40 Trucks Each

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC ***(1500 EDT 05/15/2008)*** forecast. The amount of commodities forecasted is based on Mission Guide Book requirements and SME input. The graphic represents single day needs with full distribution system in place and operating.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Commodities Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Isabel 2003 Commodities Model

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	Truckloads per State	County	Truckloads per County
North Carolina		Beaufort	4
		Bertie	2
		Camden	1
		Carteret	5
		Chowan	1
		Craven	7
		Currituck	1
		Dare	3
		Edgecombe	2
		Gates	1
		Halifax	3
		Hertford	2
		Hyde	1
		Jones	1
		Martin	2
		Northampton	2
		Onslow	1
		Pamlico	1
		Pasquotank	3
		Perquimans	1
		Pitt	9
		Tyrrell	1
		Washington	1
North Carolina	55		
Virginia		Amelia	1
		Brunswick	1
		Chesterfield	1
		Dinwiddie	1
		Emporia City	1
		Franklin City	1

State	Truckloads per State	County	Truckloads per County
Virginia		Greensville	1
(continued)		Isle Of Wight	1
		Nottoway	1
		Prince George	1
		Southampton	1
		Suffolk City	1
		Sussex	1
Virginia	13		

The amount of commodities forecasted is based on Mission Guide Book requirements and SME input and the above table indicates suggested needs based on phased deployment of a commodities distribution system.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Isabel 2003 Commodities Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

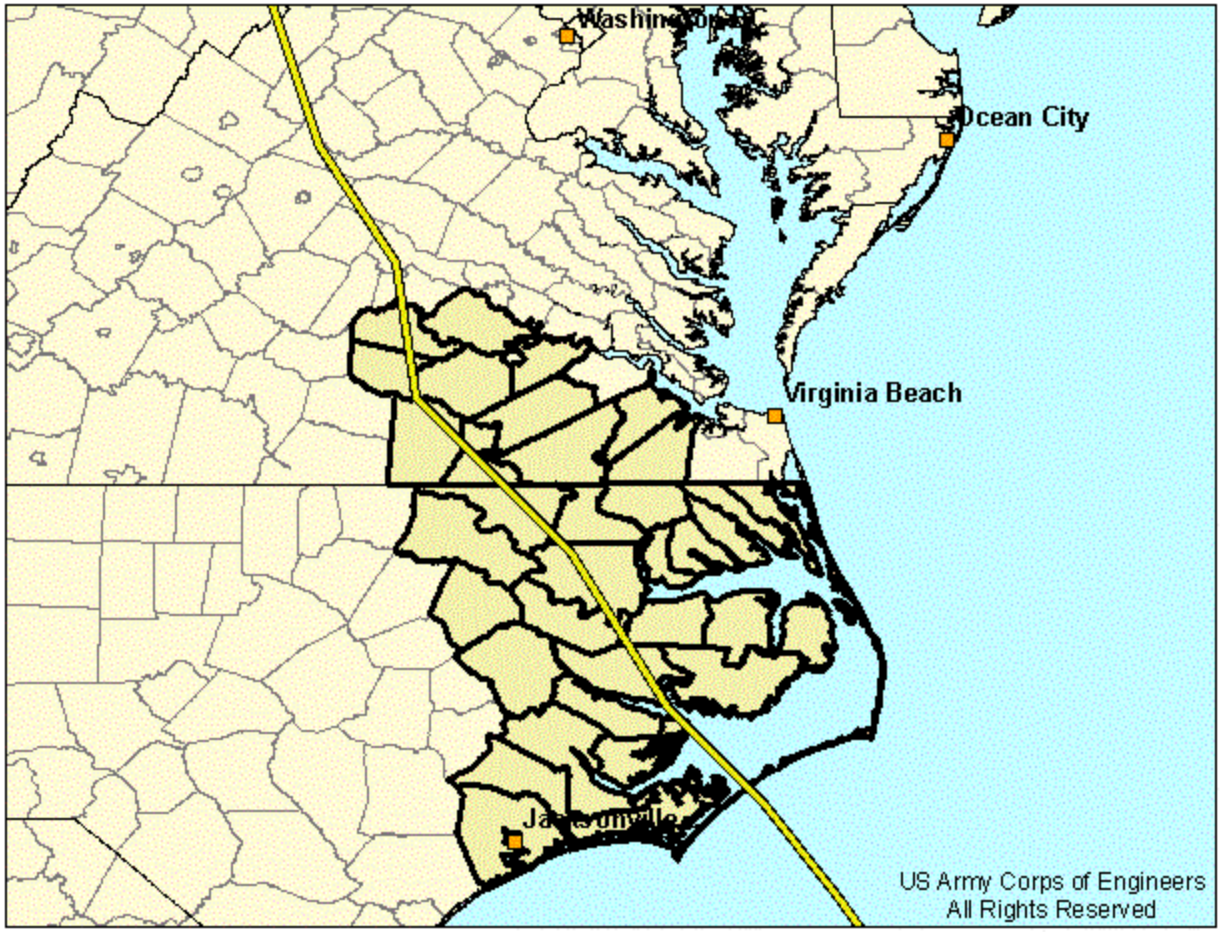
Sources:
HURREVAC
LRL-DEBRIS

Hurricane Isabel 2003 Temporary Roofing Model

US Army Corps of Engineers

Landfall Plus About 12 Hours

For Planning Purposes Only!



0 100 200 Miles

Post Landfall Temporary Roofing Model Results

North Carolina - 9,800
Virginia - 600

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Temporary Roofing

- < 2,000 units
- 2,000 - 3,999 units
- 4,000 - 5,999 units
- 6,000 - 9,999 units
- > 10,000 units

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC (1500 EDT 05/15/2008) forecast. Temporary roofing is based on 3% in CAT 1 and 6% in CAT 2.

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Roofing Model	
Generated By: Siemsen, LRL 1530 EDT 05/15/2008	
Sources: HURREVAC LRL-DEBRIS	Page 6 of 13

Hurricane Isabel 2003 Temporary Roofing Model

US Army Corps of Engineers

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	House Units per State	County	House Units per County
North Carolina		Beaufort	900
		Bertie	500
		Camden	< 100
		Carteret	1,100
		Chowan	200
		Craven	1,100
		Currituck	< 100
		Dare	500
		Edgecombe	300
		Gates	200
		Halifax	500
		Hertford	400
		Hyde	200
		Jones	< 100
		Martin	600
		Northampton	300
		Onslow	200
		Pamlico	300
		Pasquotank	500
		Perquimans	200
		Pitt	1,500
		Tyrrell	< 100
		Washington	300
North Carolina	9,800		
Virginia		Amelia	< 100
		Brunswick	200
		Chesterfield	< 100
		Dinwiddie	200
		Emporia City	< 100
		Franklin City	< 100

State	House Units per State	County	House Units per County
Virginia		Greensville	< 100
(continued)		Isle Of Wight	< 100
		Nottoway	< 100
		Prince George	< 100
		Southampton	200
		Suffolk City	< 100
		Sussex	< 100
Virginia	600		

Temporary roofing is based on 3% in CAT 1 and 6% in CAT 2.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

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Hurricane Isabel 2003 Roofing Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

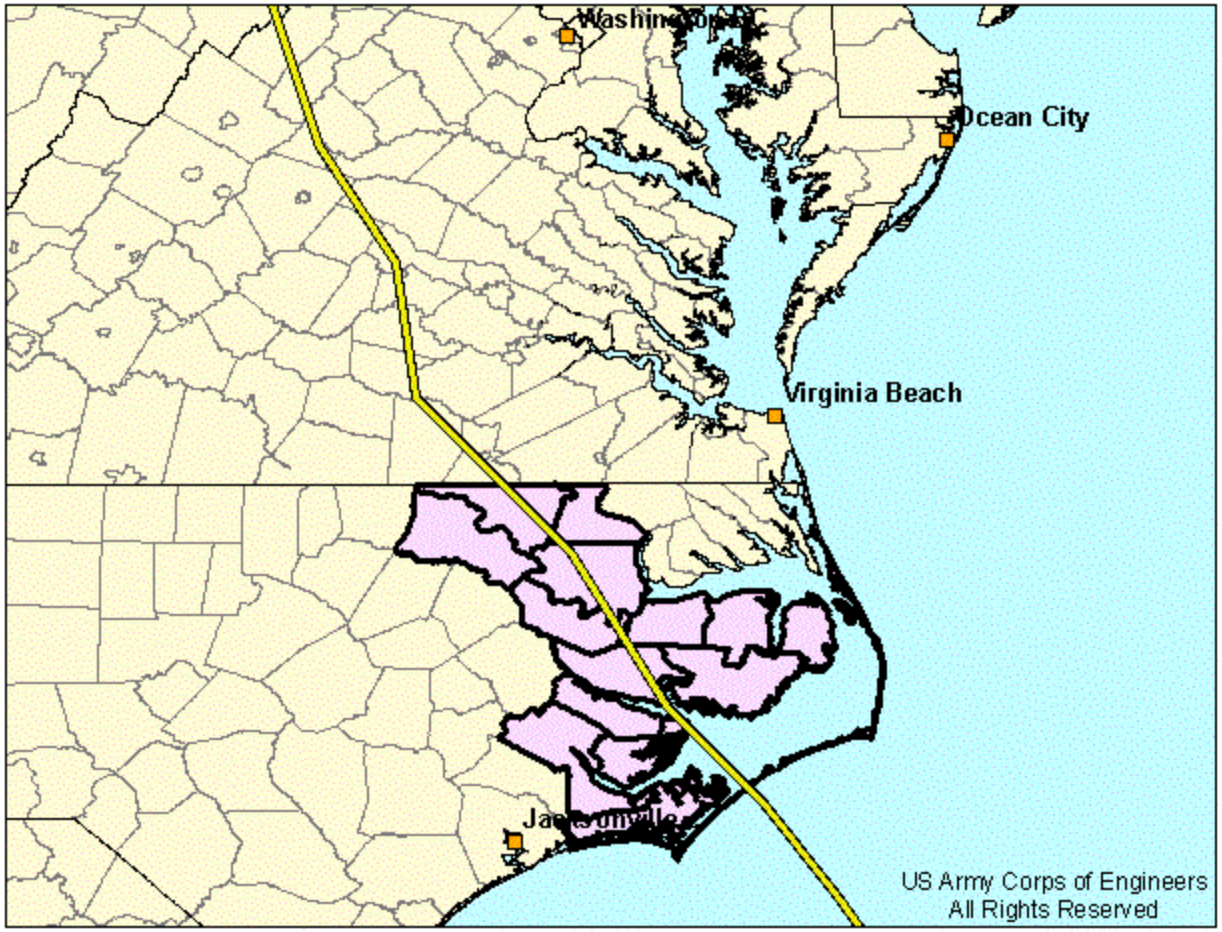
Sources:
HURREVAC
LRL-DEBRIS

Hurricane Isabel 2003 Temporary Housing Model

US Army Corps of Engineers

Landfall Plus About 12 Hours

For Planning Purposes Only!



0 100 200 Miles

Post Landfall Temporary Housing Model Results

North Carolina - 200

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Temporary Housing

- < 2,000 units
- 2,000 - 3,999 units
- 4,000 - 5,999 units
- 6,000 - 9,999 units
- > 10,000 units

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC (1500 EDT 05/15/2008) forecast. Temporary housing is based on 1% in CAT 2.

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Housing Model	
Generated By: Siemsen, LRL 1530 EDT 05/15/2008	
Sources: HURREVAC LRL-DEBRIS	Page 8 of 13

US Army Corps of Engineers

Hurricane Isabel 2003 Temporary Housing Model

For Planning Purposes Only!

Landfall Plus About 12 Hours

State	House Units per State	County	House Units per County
North Carolina		Beaufort	200
		Bertie	< 100
		Carteret	< 100
		Craven	< 100
		Dare	< 100
		Halifax	< 100
		Hertford	< 100
		Hyde	< 100
		Martin	< 100
		Northampton	< 100
		Pamlico	< 100
		Tyrrell	< 100
		Washington	< 100
North Carolina	200		

Temporary housing is based on 1% in CAT 2.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

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Hurricane Isabel 2003 Housing Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

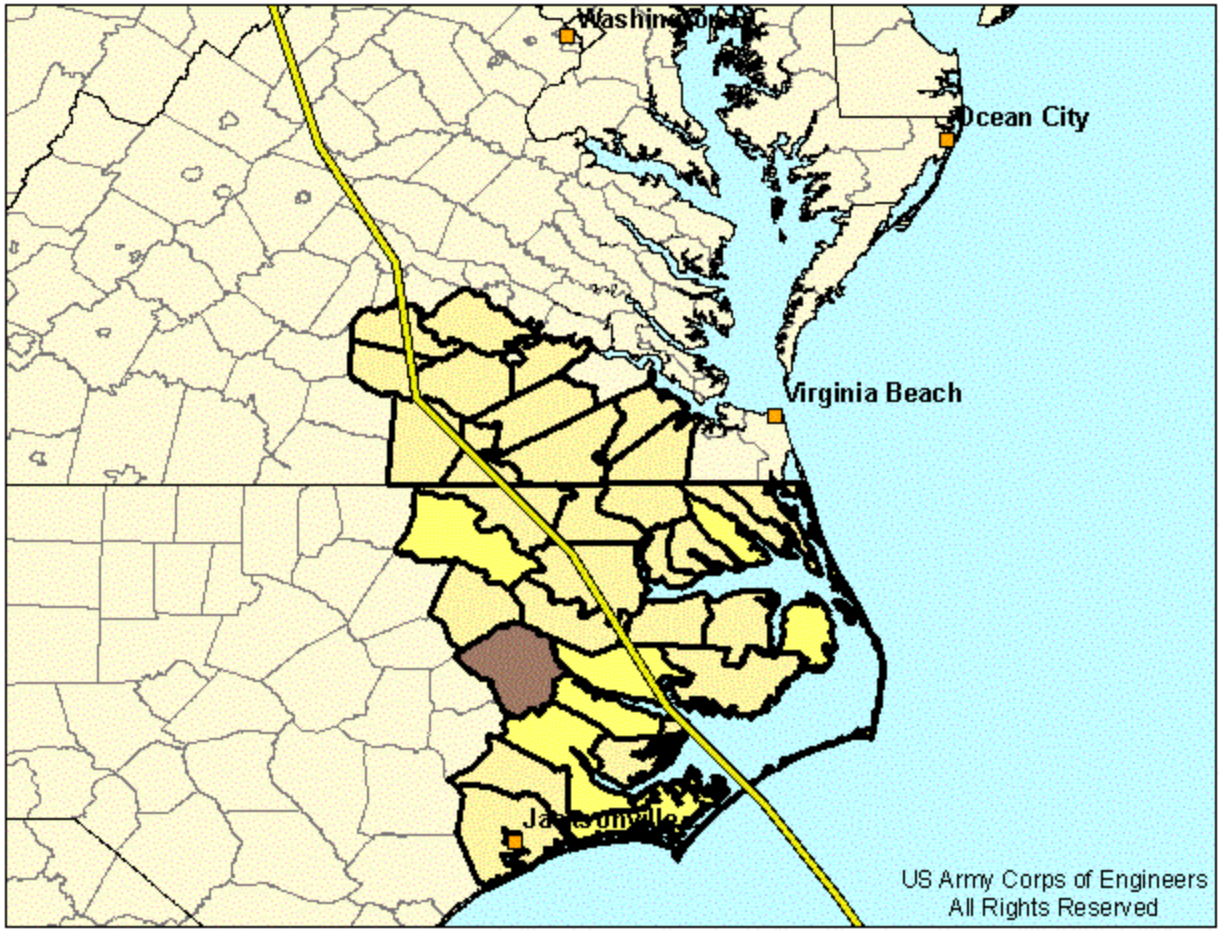
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Isabel 2003 Population Model

Landfall Plus About 12 Hours

For Planning Purposes Only!



0 100 200 Miles

Post Landfall Population Model Results

North Carolina - 652,000
Virginia - 85,000

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Population

- < 25,000 persons
- 25,000 - 99,999 persons
- 100,000 - 174,999 persons
- 175,000 - 249,999 persons
- > 250,000 persons

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC (1500 EDT 05/15/2008) forecast. The numbers of persons included in this model output are those that would be included within estimated hurricane force winds (Census 2000 values adjusted to July 2006 values).

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Population Model	
Generated By: Siemsen, LRL 1530 EDT 05/15/2008	
Sources: HURREVAC LRL-DEBRIS	Page 10 of 13

US Army Corps of Engineers

Hurricane Isabel 2003 Population Model

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	Population per State	County	Population per County
North Carolina		Beaufort	47,000
		Bertie	20,000
		Camden	4,000
		Carteret	64,000
		Chowan	15,000
		Craven	93,000
		Currituck	2,000
		Dare	32,000
		Edgecombe	19,000
		Gates	12,000
		Halifax	42,000
		Hertford	24,000
		Hyde	6,000
		Jones	4,000
		Martin	25,000
		Northampton	20,000
		Onslow	13,000
		Pamlico	13,000
		Pasquotank	40,000
		Perquimans	13,000
		Pitt	125,000
		Tyrrell	5,000
		Washington	14,000
North Carolina	652,000		
Virginia		Amelia	4,000
		Brunswick	12,000
		Chesterfield	2,000
		Dinwiddie	13,000
		Emporia City	6,000
		Franklin City	8,000

State	Population per State	County	Population per County
Virginia		Greensville	12,000
(continued)		Isle Of Wight	< 1,000
		Nottoway	6,000
		Prince George	< 1,000
		Southampton	14,000
		Suffolk City	3,000
		Sussex	5,000
Virginia	85,000		

The number of persons estimated to be within the hurricane force winds comes from Census 2000 values adjusted to July 2006 values.

Details about this model may be obtained at http://www.englink.usace.army.mil
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Hurricane Isabel 2003 Population Model

Generated By:
Siemsen, LRL 1530 EDT 05/15/2008

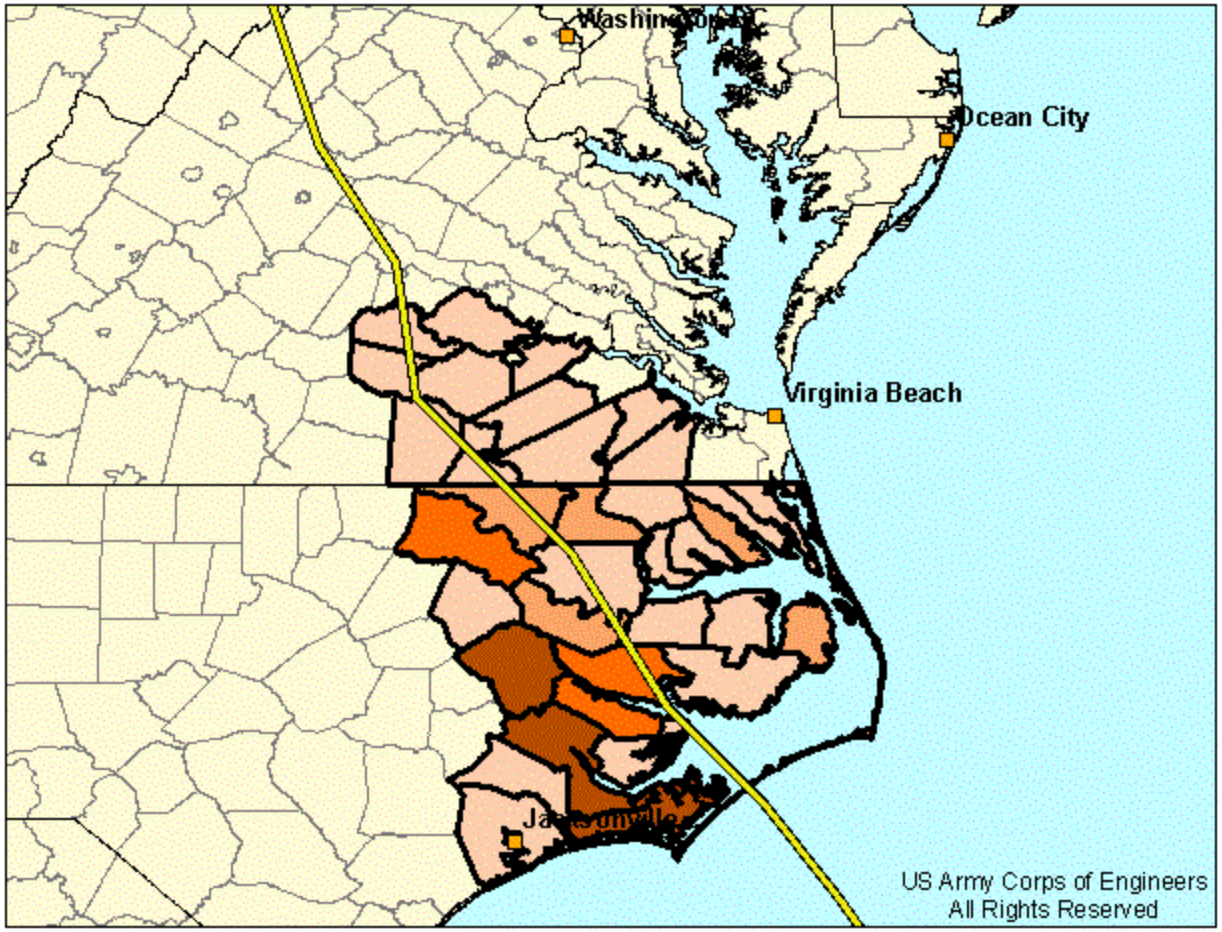
Sources:
HURREVAC
LRL-DEBRIS

Hurricane Isabel 2003 Households Model

Landfall Plus About 12 Hours

US Army Corps of Engineers

For Planning Purposes Only!



0 100 200 Miles

Post Landfall Households Model Results

North Carolina - 261,000
Virginia - 31,000

Model results per County on following page

This model is based on a Category 2 storm making landfall on Outer Banks, NC.

Historic Track

Households

- < 7,500 households
- 7,500 - 14,999 households
- 15,000 - 24,999 households
- 25,000 - 49,999 households
- > 50000 households

Information provided on this page displays a Category 2 storm making landfall on Outer Banks, NC. These projections are based on information from the NHC (1500 EDT 05/15/2008) forecast. The numbers of households included in this model output are those that would be included within estimated hurricane force winds (Census 2000 values adjusted to July 2006 values).

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Isabel 2003 Households Model	
Generated By: Siemsen, LRL 1530 EDT 05/15/2008	
Sources: HURREVAC LRL-DEBRIS	Page 12 of 13

US Army Corps of Engineers

Hurricane Isabel 2003 Households Model

Landfall Plus About 12 Hours

For Planning Purposes Only!

State	Households per State	County	Households per County
North Carolina		Beaufort	19,000
		Bertie	8,000
		Camden	2,000
		Carteret	27,000
		Chowan	6,000
		Craven	35,000
		Currituck	< 1,000
		Dare	14,000
		Edgecombe	7,000
		Gates	5,000
		Halifax	16,000
		Hertford	10,000
		Hyde	3,000
		Jones	2,000
		Martin	10,000
		Northampton	8,000
		Onslow	5,000
		Pamlico	6,000
		Pasquotank	15,000
		Perquimans	6,000
		Pitt	49,000
		Tyrrell	2,000
		Washington	6,000
North Carolina	261,000		
Virginia		Amelia	2,000
		Brunswick	4,000
		Chesterfield	< 1,000
		Dinwiddie	5,000
		Emporia City	3,000
		Franklin City	3,000

State	Households per State	County	Households per County
Virginia		Greensville	4,000
(continued)		Isle Of Wight	< 1,000
		Nottoway	3,000
		Prince George	< 1,000
		Southampton	5,000
		Suffolk City	< 1,000
		Sussex	2,000
Virginia	31,000		

The number of households estimated to be within the hurricane force winds comes from Census 2000 values adjusted to July 2006 values.

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Hurricane Isabel 2003 Households Model

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Sources:
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LRL-DEBRIS